IN THE CLAIMS

Please amend the claims as follows.

1 - 3.   (Canceled).

4.   (Currently Amended) <u>A computer implemented method of identifying events in a process, the method comprising:</u>

      <u>running a principal component analysis model on sensor data from the process;</u>

      <u>calculating statistics related to the model;</u>

      <u>determining if an event is occurring;</u>

      <u>finding a nearest cluster of bad actors related to the event to identify the event;</u>

      <u>storing the found nearest cluster of bad actors in a storage device; and</u>

      <u>further comprising for new bad actors:</u>

            <u>identifying a sequence of cluster matches;</u>

            <u>correlating the sequence of cluster matches to known events;</u>

            ~~The method of claim 3 and further comprising:~~

            determining if a cluster needs to be split when new bad actors are added; and

            splitting the cluster into two clusters using a goodness of fit algorithm.

5.   (Original) The method of claim 4 and further comprising:

      determining if a new event category is encountered; and

      broadening limits for the sequence of clusters.

6.   (Canceled).

7.   (Currently Amended) <u>A computer implemented method of identifying events in a process, the method comprising:</u>

      <u>running a principal component analysis model on sensor data from the process;</u>

      <u>calculating statistics related to the model;</u>

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determining if an event is occurring:

finding a nearest cluster of bad actors related to the event to identify the event; and

storing the found nearest cluster of bad actors in a storage device:

      wherein a cluster is limited to a predetermined number of bad actors; and

      ~~The method of claim 6,~~

. wherein the predetermined number of bad actors is ten.

8-9.   (Canceled)

10.   (Currently Amended) A computer implemented method of identifying events in a process, the method comprising:

      running a principal component analysis model on sensor data from the process:

      calculating statistics related to the model:

      determining if an event is occurring:

      finding a nearest cluster of bad actors related to the event to identify the event:

      storing the found nearest cluster of bad actors in a storage device; and

      using a feature scoring scheme to identify top contributors of bad actors:

      ~~The method of claim 9~~ wherein the feature scoring scheme is based on rank, value, and percent of contribution to a Q-residual sensor to identify a relative importance.

11.   (Original) The method of claim 10, wherein the top-contributors are determined based on a majority percentage of the Q-residual.

12.   (Original) The method of claim 10, where the top-contributors are determined based on only the contributors with absolute values that are drastically different from values of other contributors.

13.   (Original) The method of claim 10 wherein the scoring scheme is based on predetermined limits.

14.   (Original) The method of claim 13 wherein, the limits are computed statistically through change point detections.

15 - 18.   (Canceled).

19.   (Currently Amended) <u>A system for identifying events in a process, the system comprising:</u>

       <u>means for running a principal component analysis model on sensor data from the process;</u>

       <u>means for calculating statistics related to the model;</u>

       <u>means for determining if an event is occurring;</u>

       <u>means for finding a nearest cluster of bad actors related to the event to identify the event;</u>

       <u>means for identifying a sequence of cluster matches;</u>

       <u>means for correlating the sequence of cluster matches to known events;</u>

~~The system of claim 18 and further comprising:~~

       means for determining if a cluster needs to be split when new bad actor(s) are added; and

       means for splitting the cluster into two clusters using a goodness of fit algorithm.

20.   (Original) The system of claim 19 and further comprising:

       means for determining if a new event category is encountered; and

       means for broadening limits for the sequence of clusters.

21 - 22.   (Canceled).

23.   (Currently Amended) <u>A system for identifying events in a process, the system comprising:</u>

       <u>means for running a principal component analysis model on sensor data from the process;</u>

       <u>means for calculating statistics related to the model;</u>

       <u>means for determining if an event is occurring;</u>

       <u>means for finding a nearest cluster of bad actors related to the event to identify the event; and</u>

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means for feature scoring to identify top contributors of bad actors in a cluster;

~~The system of claim 22~~ wherein the means for feature scoring is based on rank, value, and percent of contribution to a Q-residual sensor to identify a relative importance.

24. (Original) The system of claim 23, wherein the top-contributors are determined based on a majority percentage of the Q-residual.

25. (Original) The system of claim 23, where the top-contributors are determined based on only the contributors with absolute values that are drastically different from values of other contributors.

26. (Original) The system of claim 23 wherein the scoring scheme is based on predetermined limits.

27. (Original) The system of claim 26 wherein, the limits are computed statistically through change point detections.

28 - 33. (Canceled).